

3RD INTERNATIONAL RED SEA EMERGENCY MEDICINE CONFERENCE



A-Typical PE ! Think Pulmonary Embolism

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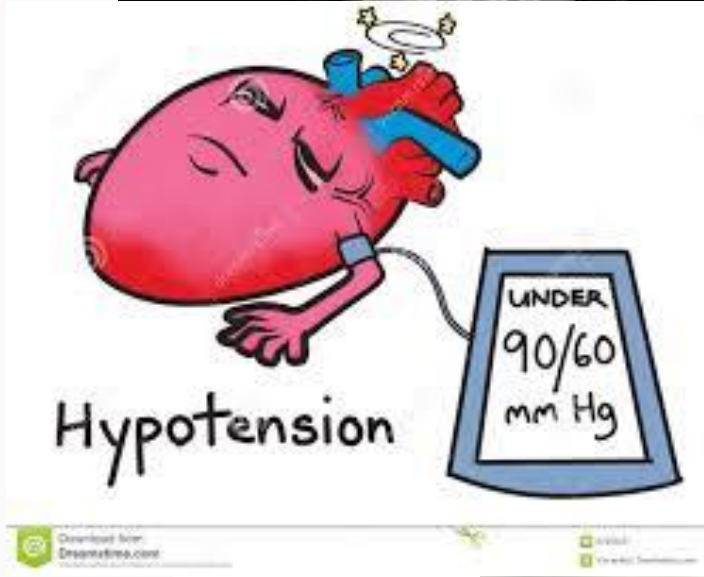
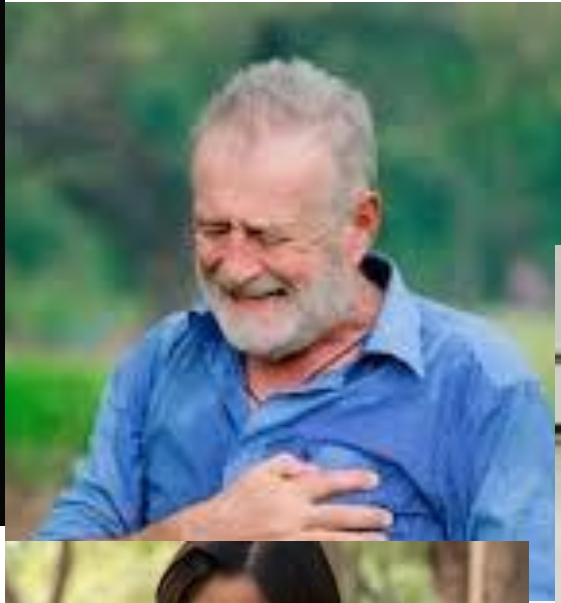
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Disclosure

- **NONE !**





**YOU HAVE YET TO SHUT UP SO HOW IS
IT YOU'RE COMPLAINING OF**



**SHORTNESS OF
BREATH?**



Case 1 – TRIAGE

Triage JD Entered On: _____
Performed On: _____ by _____

Vital Signs
Temperature Tympanic: 37.9 degC
Heart Rate Monitored: 134 bpm (>HHI)
Pulse location: Radial
Respiratory rate: 16 brth/min
Oxygen Saturation: 98%
Blood pressure systolic: 128 mmHg
Blood pressure diastolic: 89 mmHg
Mean Arterial Pressure, Cuff: 102 mmHg
Blood pressure position: Sitting
Blood pressure location: Right arm

General
Arrival on Date: _____
ER Mode of Arrival: Wheelchair
ER Accompanied By: Guardian
Language: Arabic
Interpreter Needed: No

DCP GENERIC CODE
Tracking Group: ED Jeddah
Tracking Acuity: 3- Urgent
Reason For Visit: Dyspnea, bil leg edema

Subjective History: patient came with leg edema and as per medical report from King Abdulaziz, her hemoglobin is low on treatment and Mass on the upper limb.
healthy

{ patient came with leg edema and as per medical report from King Abdulaziz, her hemoglobin is low on treatment and Mass on the upper limb healthy }

Objective History: alert febrile
not inditress
denies any chest pain or palpitation.

Neuro. Assessment SIRS

previously charted by: _____
previously charted by: _____

Temp = 37.9 °C

HR = 134 b/m

RR = 16 b/m

SaO₂ = 98%

* Dyspnoea

* Bilateral leg oedema

NO chest pain or palpitations



A vertical banner image showing a satellite view of the Earth from space, focusing on the Middle East and surrounding regions. The image is framed by a red and white diagonal border.

Unconfirmed



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Case 1 – *HISTORY*

- Young female in her 30s
- c/o:
 - **Breathlessness** on minimal exertion ; **acute** onset ; 3 days
 - Chest **heaviness** ; NOT pain
 - **Fever**
 - **Worsening** swelling both lower legs
- Past Hx:
 - **SLE ; APL Syndrome**
 - Generalised swelling of shoulders, face, legs – 2 months
- Drugs Hx: NIL regular : ?non-compliance
- Allergies: None known



Case 1 – *EXAMINATION*

- General:
 - No acute respiratory distress features
 - SaO₂: 98% (on room air)
 - **SIRS +ve** (HR **134** / min ; T = **37.9** 'C)
- Respiratory:
 - **Bibasal coarse** inspiratory **crepitations**
 - NO wheeze
 - **Decreased breath sounds to both bases**
- C V S:
 - **Ejection systolic murmur** with **parasternal heave**
 - **Bilateral pitting oedema** to mid-shins (grade 3)



Case 1 – *DIFFERENTIALS*

- c/o dyspnoea
- c/o both lower legs swelling
- c/o subjective fever
- Objective pyrexia
- Tachycardia
- Good O2 sats & BP
- NO palpitations
- NO chest pain
- (?new) murmur
- Parasternal heave
- Bibasal crepts
- Bilat. LL oedema



Case 1 – *DIFFERENTIALS*

- c/o **dyspnoea**
- ~~c/o both lower legs swelling~~
- c/o **subjective fever**
- **Objective pyrexia**
- **Tachycardia**
- ~~Good O2 sats & BP ?~~
- NO palpitations
- NO chest pain
- ~~(?new) murmur~~
- ~~Parasternal heave~~
- **Bibasal crepts**
- ~~Bilat. LL oedema~~

• **? Pneumonia**



Case 1 – *DIFFERENTIALS*

- c/o dyspnoea
- c/o both lower legs swelling
- ~~Objective pyrexia~~
- Tachycardia ?
- ~~Good O2 sats & BP ?~~
- ~~NO palpitations~~
- ~~NO chest pain ?~~
- (?new) murmur
- Parasternal heave
- Bibasal crepts
- Bilat. LL oedema

• ? Congestive Heart Failure

Case 1 – *DIFFERENTIALS*

- c/o **dyspnoea**
- ~~c/o both lower legs swelling~~
- c/o **subjective fever**
- **Objective pyrexia**
- **Tachycardia**
- Good O2 sats & BP?
- ~~NO palpitations~~
- ~~NO chest pain~~
- (?new) **murmur**
- **Parasternal heave**
- ~~Bibasal crepts~~
- ~~Bilat. LL oedema~~

• **Infective
Endocarditis?**



Case 1 – *DIFFERENTIALS*

- **c/o dyspnoea**
- **c/o both lower legs swelling?**
- ~~c/o subjective fever?~~
- ~~Objective pyrexia?~~
- **Tachycardia**
- ~~Good O2 sats & BP?~~
- ~~NO palpitations?~~
- **NO chest pain**
- **(?new) murmur**
- ~~Parasternal heave~~
- ~~Bibasal crepts~~
- ~~Bilat. LL oedema~~

- **Anaemic Failure?**



Case 1 – *DIFFERENTIALS*

- c/o **dyspnoea**
- c/o **both lower legs swelling**
- ~~c/o subjective fever~~
- ~~Objective pyrexia~~
- **Tachycardia**
- ~~Good O2 sats+ BLD PRESSURE~~
- ~~NO PALPITATIONS~~
- ~~NO chest pain~~
- (?new) **murmur ?**
- ~~Parasternal heave~~
- ~~Bibasal crepts~~
- **Bilat. LL oedema**

• **Pulmonary Embolism?**



Case – *DIFFERENTIALS* OR *5 DIFFERENT CASES*

- c/o **DYSPNOEA**
- c/o both lower legs swelling
- c/o subjective fever
- Objective pyrexia
- Tachycardia
- Good O2 sats + Bld Pressure
- NO PALPITATIONS
- NO chest pain
- (?new) murmur ?
- Parasternal heave
- Bibasal crepts
- Bilat. LL oedema

• ? **Pneumonia**

• ? **Bacterial
endocarditis**

• **Pulmonary
Embolism?**

• ? **Congestive Heart
Failure**

• ? **Anaemia /
Anaemic failure**



Dilemma in ED / Issues

- Overlapping symptoms AND signs
- Inappropriate triage
- Multiple DDs
- Room (space) to assess patients
- Room (space) to treat / manage patients
- Delay in investigations
- Delay in treatment
- Endorsement times (nurses AND physicians)
- Monitoring (rooms N/A for ED patients)



Pulmonary Embolism – *STATS & FACTS*

- Clinically described first in 1800s
- Von Virchow 1st described connection b/w venous thrombosis & PE ; not a disease in itself !
- **Virchow's triad**
 - *Endothelial injury*
 - *Hypercoagulability*
 - *Turbulence of blood flow OR stasis*
- Potentially life-threatening **3rd most frequent cardiovascular condition** with annual incidence **1-2/1000** [1]



Pulmonary Embolism – *STATS & FACTS* – Cont'd

- **>90%** PEs arise from thrombi in large 'deep' veins of legs [2]
- Underdiagnosed; In USA, PE found in CT scans:
 - Inpatients : **3.4%** ; outpatients : **0.9%** [3]
 - Cancer patients : **3.9%** [4]
- Mortality increases with H/D instability
 - H/D Stable : **2-6%** ; H/D Unstable : **>30%** [5]



Pulmonary Embolism— *PRESENTATION: SYMPTOMS*

- Clinical features ^[6] on presentation include:
 - ✓ Acute **DYSPNOEA** (73%)
 - ✓ Pleuritic **CHEST PAIN** (66%)
 - ✓ **Syncope**
 - ✓ ↓ ing consciousness
 - ✓ Fever- **T >37.8°C** (43%)
 - ✓ **Hypotension**
 - ✓ Abdominal pain
 - ✓ Slowly progressive SOB
 - ✓ Productive cough
 - ✓ **HEMOPTYSIS** (13%)
 - ✓ Hypoxia
 - ✓ Wheezing
 - ✓ New onset AF
 - ✓ Cough (37%)



Pulmonary Embolism – *PRESENTATION: SIGNS* [6]

- ✓ TACHYPNOEA (96%)
- ✓ Cyanosis (19%)
- ✓ Tachycardia (44%)
- ✓ Cardiac murmur (23%)
- ✓ Accent.d 2nd HS (53%)
- ✓ Flank pain
- ✓ Pleural rub
- ✓ Crepitations (58%)
- ✓ LL oedema (24%)
- ✓ Diaphoresis (36%)
- ✓ S3 or S4 gallop (34%)
- ✓ Delirium (in elderly)
- ✓ Fever- T <39°C (14%)
- ✓ ↓ed breath sounds



Pulmonary Embolism – “TYPICAL” FEATURES [7]

- One of the following FOUR:
 - Dyspnoea
 - Chest pain
 - Hemoptysis
 - Signs of DVT



PE – “ATYPICAL” PRESENTATIONS [1]

- Sudden **Cardiac Arrest** (CRA)
- **ARDS** mimic
- **Asthmatic crisis**-like syndrome
- Typical **Respiratory Failure** (*hypoxia & hypocapnia*)
- **Syncope**
- **Fever syndrome** +/- *pseudopneumonia*
- **ACS** +/- *chest pain*
- **Acute RHF** / shock / hypotension (*often with epigastric pain*)
- **LVF** + *pulmonary congestion*



PE – ATYPICAL PRESENTATIONS ^[1] – Cont'd

- **Pleuritic chest pain syndrome**
+/- hemoptysis
- **PE with 'Paradoxic' embolism**
(S/S of embolization site):
AMI, CVA, splenic infarction /
acute renal infarction, mesenteric
infarction, "ischemic" extremity
embolism
- Complete AV block
- Persistent / paroxysmal tachyarrhythmias
- DVT + "silent" PE
- Abdominal pain *without acute abdomen*
- Delirium





Pulmonary Embolism – *RISK FACTORS*

- **High index** of suspicion – b/c “**ATYPICAL**” presentations
- ACP guidelines (2015): **Validated clinical prediction rules** be used to estimate pre-test probability of PE and to interpret results
 - *Modified Well’s scoring system*
 - *Revised Geneva scoring system*
 - *PERC (Pulmonary Embolism Rule Out Criteria)*



Pulmonary Embolism – *SCORING SYSTEM*

	Clinical Characteristic	Score
1	Previous PE or DVT	+ 1.5
2	Heart rate >100 / min	+ 1.5
3	Recent surgery or immobilisation (within last 30 days)	+ 1.5
4	Clinical signs of DVT	+ 3
5	Alternative diagnosis LESS likely than PE	+ 3
6	Hemoptysis	+ 1
7	Cancer (treated within last 6 months)	+ 1

Clinical probability of PE	Score
LOW	0 – 1
Intermediate	2 – 6
HIGH	> 6

Pulmonary Embolism – *INVESTIGATIONS*

- D-Dimer assay
- CXR
- Contrast CT chest / CTPA [8,9]
- V:Q scan
- Echo
- M R I



Pulmonary Embolism – *MANAGEMENT*

- ABCDE (*?stage of presentation: multiple PE / infarct*)
- **Symptomatic** (*supplemental O₂ , analgesia, nebs*)
- Anticoagulation: **SC** LMWH or **IV** Heparin
 - **IV Unfractionated Heparin (UFH)**: 80 U/kg or 5000 U bolus f/b 18 U/kg/hr or 1300 U/hr
 - **SC Enoxaparin** (1.5 mg/kg OD) or **Fondaparinux** (2.5 mg OD) recommended over IV UFH [10]



Pulmonary Embolism – *MANAGEMENT*

- Thrombolysis

- beneficial in **unstable patients** with PE [11]
- ↓ed mortality c.f. anticoagulation alone [11]
- ↓ed mortality further when used with IVC filters [11, 12]

- Direct Thrombin inhibitors & Factor Xa inhibitors

- **Warfarin & NOACs** (Apixaban, Rivaroxaban, Edoxaban, Dabigatran)
- At least 3 months UNLESS high risk for TED PLUS no high risk for bleeding ; then for longer



Pulmonary Embolism – *MANAGEMENT*

- Embolectomy

- Surgical Vs catheter
- For **massive PE** patients who:
 - *remain unstable after receiving fibrinolysis*
 - *have C/I to fibrinolysis*
- **NOT** for low risk OR submassive PE with better prognosis

- Vena Cava filters ^[13]

- Acute venous TED with **absolute C/I to A/coagulant therapy**
- **Massive PE survivors** in whom recurrent PE will be fatal
- Objective **recurrent venous TE** despite a/coagulant therapy



Pulmonary Embolism – *CONCLUSION*

- Typical Vs Atypical: BOTH have **similar** prognostic factors, RV dysfunction, central PE (on CT) and 30-day mortality [7]
- Wide spectrum and NON-specific manifestations
- PE occurs on its own OR part of syndrome(s)
- Undiagnosed PE in hospitalised patients: High rate of sudden death (50-80%) [14]
- *Don't let the "killer" ... TYPICAL or ATYPICAL ... kill your patient. Think PE !!!*



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Thanks !

Kindly submit the evaluation



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